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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,477	01/15/2004	Young Dae Kim	YHK-0131	4151
34610	7590	11/01/2006	EXAMINER	
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ART UNIT		PAPER NUMBER		
		2629		

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/757,477	KIM, YOUNG DAE	
	<b>Examiner</b> William Boddie	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                         |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/1/04</u> . | 6) <input type="checkbox"/> Other: _____ .  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto et al. (US 5,854,540).

**With respect to claim 1,** Matsumoto discloses, a method of driving a plasma display panel, comprising the steps of:

applying a first waveform (subfield A in fig. 5) to sustain electrodes (row electrode X in fig. 5) in an initialization period (reset period in fig. 5) included in an initial sub-field of one frame (LSB sub-field and succeeding sub-field); and

applying a second waveform (subfield B in fig. 5) to the sustain electrodes in an initialization period of each of the remaining sub-fields (sub-fields succeeding to the second sub-field mentioned above) following the initial sub-field (see the 6<sup>th</sup> embodiment; col. 24, line 60 – col. 25, line 18; especially note col. 25, lines 13-18).

**With respect to claim 2,** Matsumoto discloses, the method as claimed in claim 1 (see above), wherein said initial sub-field is at least one sub-field including the first sub-field of said frame (first sub-frame is the LSB sub-frame (clear in fig. 13; aka 5<sup>th</sup> embodiment), as discussed in the 6<sup>th</sup> embodiment).

**With respect to claim 3,** Matsumoto discloses, the method as claimed in claim 2 (see above), wherein said initial sub-field is the first and second sub-fields of said frame (fig. 13 shows the order of the sub-fields, col. 25, lines 10-11 confirms that the second sub-field is indeed the sub-field that succeeds the first sub-field of the frame).

**With respect to claim 4,** Matsumoto discloses, the method as claimed in claim 1 (see above), wherein each of the remaining sub-fields other than the initial sub-field has a higher brightness weighting value than the initial sub-field (clear from fig. 13, that the higher brightness weighting values, i.e.  $2^2$ ,  $2^5$ , succeed the initial sub-field).

**With respect to claim 12,** Matsumoto discloses, a method of driving a plasma display panel, comprising the steps of:

applying a first waveform (subfield B in fig. 16) to sustain electrodes (row electrode X in fig. 5) in an initialization period of a sub-field having a low weighting value at one frame (clear from fig. 16; also see col. 26, lines 58-67); and

applying a second waveform (subfield A in fig. 16) to the sustain electrodes in an initialization period of each of the remaining subfields (two brightest sub-fields) other than the initial sub-field having said low brightness weighting value (clear from fig. 16; subfield A/B can be further seen in fig. 5, where clearly the initialization period ("reset period") is different for the two sub-fields).

**With respect to claim 13,** Matsumoto discloses, the method as claimed in claim 12 (see above), wherein said sub-field having said low brightness weighting value includes at least one sub-field having a brightness weighting value that is less than a

half of the maximum brightness weighting value of said frame (maximum brightness is  $2^7$ , while lowest brightness weighting value is  $2^0$ ).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5-11 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (US 5,854,540) in view of Applicant's Admitted Prior Art (hereinafter, APA).

**With respect to claim 5,** Matsumoto discloses, the method as claimed in claim 1 (see above).

Matsumoto does not expressly disclose, wherein said initialization period of the initial sub-field includes a set-up interval for forming wall charges within cells by a writing discharge, and a set-down interval for erasing a portion of said wall charges by an erasure discharge.

APA discloses, a sub-field waveform (fig. 5), containing an initialization period of the subfield that includes a set-up interval for forming wall charges within cells by a writing discharge, and a set-down interval for erasing a portion of said wall charges by an erasure discharge (clear from fig. 5), wherein the sustain electrodes are electrically floated during a first time interval (also see page 6, line 4 – page 8, line 11 of the current specification).

Matsumoto and APA are analogous art because they are both from the same field of endeavor namely, sub-field waveforms for plasma display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the subfield A reset period of Matsumoto with the initialization period taught by APA.

The motivation for doing so would have been the increased contrast that the initialization period creates for the display device (APA; page 6, lines 8-10).

Therefore it would have been obvious to combine APA with Matsumoto for the benefit of increased contrast to obtain the invention as specified in claim 5.

To further clarify the combination, Matsumoto discloses, applying one type of waveform to the first two subfields (low brightness subfields) of a frame (6<sup>th</sup> embodiment) and a separate waveform to the higher brightness subfields (in part illustrated by fig. 13).

By Applicant's admission the waveforms of figures 3 and 5 have been known in the art prior to the invention. Also known is that the waveform of figure 5 provides for an increased contrast, but is hampered by the fact that misfires occur in high brightness subfields. Finally it is also disclosed by the Applicant that the initialization waveforms of figure 3 are not susceptible to brightness misfires in high brightness subfields, but lack the improved contrast quality of the figure 5 waveforms.

Thus it seems clear to the Examiner that it would have been obvious to one of ordinary skill in the art to combine the two teachings to create a display device having improved contrast, as well as, protection against misfires at high brightness subfields.

**With respect to claim 6,** Matsumoto and APA disclose, the method as claimed in claim 5 (see above).

Matsumoto further discloses, wherein the remaining sub-fields other than the initial sub-field includes a set-down interval for erasing the wall charges by an erasure discharge (Ep in fig. 5; col. 13, lines 10-11), and

wherein the sustain electrodes are supplied with a ground voltage (clear from reset period in sub-field B in fig. 5) in an interval during the initialization period.

APA further discloses, initialization periods (fig. 3) that include a set-up interval for forming wall charges within cells by a writing discharge, and a set-down interval for erasing a portion of said wall charges by an erasure discharge, and wherein the sustain electrodes are supplied with a ground voltage during the set-up interval (also see page 4, lines 1-21 of the current specification).

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the subfield B reset period of Matsumoto with the initialization period taught by APA.

The motivation for doing so would have been the reliability of illumination, decreasing the occurrences of misfires and miswritings in high brightness sub-fields (APA; page 9, lines 4-14).

Therefore it would have been obvious to combine APA with Matsumoto for the benefit of less misfires to obtain the invention as specified in claim 6.

**With respect to claim 7,** Matsumoto and APA disclose, the method as claimed in claim 5 (see above).

APA further discloses, wherein each of said initialization periods of the remaining sub-fields other than the initial sub-field includes a set-up interval for forming wall charges within cells by a writing discharge, and a set-down interval for erasing a portion of said wall charges by an erasure discharge, and wherein the sustain electrodes are electrically floated during a shorter time than said first time interval in the set-up interval (seems clear from a comparison between fig. 3 and fig. 5, that the sustain is floated for a shorter time in the fig. 3, sub-field.).

**With respect to claim 8,** Matsumoto and APA disclose, the method as claimed in claim 7 (see above).

As discussed above the pairing of the teachings of Matsumoto with that of APA sufficiently disclose an initialization period. In the first two sub-fields a sub-field A is supplied to the sustain electrodes. In the succeeding sub-frames (the higher brightness sub-frames) a second waveform is applied to the sustaining electrodes.

The replacement of the reset period of this second waveform with the initialization period of the APA's figure 3, clearly ensures that a time interval when the sustain electrode is floated is set to be shorter as it goes into the last sub-field of a frame.

**With respect to claim 9,** Matsumoto and APA disclose, the method as claimed in claim 5 (see above).

APA further discloses, wherein a voltage rising at a first slope is derived into the sustain electrode during said first time interval (clear from fig. 5).

**With respect to claim 10,** Matsumoto and APA disclose, the method as claimed in claim 9 (see above).

APA further discloses, wherein each of said initialization periods of the remaining sub-fields other than the initial sub-field includes a set-up interval for forming wall charges within cells by a writing discharge, and a set-down interval for erasing a portion of said wall charges by an erasure discharge, and wherein a voltage rising at a lower slope than said first slope is applied to the sustain electrode during said first time interval (clear from fig. 3).

**With respect to claim 11,** Matsumoto and APA disclose, the method as claimed in claim 10 (see above).

The combination of APA and Matsumoto disclose, wherein said voltage applied to the sustain electrode is set to have a lower slope (APA; fig. 3) as it goes into the last sub-field of said frame (Matsumoto; embodiment 6). For further discussion see the above rejection of claim 8.

**With respect to claims 14-20,** as these claims are sufficiently similar to the limitations of claims 5-11, claims 14-20 are rejected on the same merits shown above in claims 5-11.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakita et al. (US 6,545,423) discloses applying different waveforms in different subfields.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wlb  
10/24/06

AMR A. AWAD  
SUPERVISORY PATENT EXAMINER

